

Yolo County Procedures for the Hart/Vote-PAD Voting System

DRAFT

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1 Introduction

1.1 System Description and Components

This manual of use procedures is for jurisdictions using the Vote-PAD (Voting-on-paper Assistive Device) with paper ballots produced and processed with the Hart Voting System 6.1. The System components are listed below.

Hart Election Management System:

- Ballot Origination Software System (BOSS) Version 4.2
- Ballot Now Version 3.2
- Tally System Version 4.2
- eCM Manager Version 1.1
- Mobile Ballot Box

Ballot Origination Software System (BOSS)

The Ballot Origination Software System (BOSS) is a software application that accepts user input of jurisdictional and election specific information. BOSS is a Windows-based program and uses a commercial database product to store and manipulate data. The ballot generation feature of BOSS creates electronic ballot styles based on the jurisdictional and election specific information supplied by the user. Ballot generation creates a single data file that is used to conduct the election at any polling location.

The Hart Voting System proprietary data file is written to multiple PC card memory devices called the Mobile Ballot Boxes (MBBs). MBBs are transported to the various polling locations throughout the county. Each MBB contains the same information so that they can be used in any location. Once BOSS generates the file for the MBB, the BOSS database becomes locked so that no more changes can be made, thus protecting the integrity of the MBB data file. The BOSS database is subsequently used to initialize the Tally database.

Refer to the *BOSS Operations Manual 6100-019* for detailed instructions.

Mobile Ballot Box

A reusable, portable FLASH memory device, the MBB is used to store and transport election information. The MBB is reusable and allows data to be stored to it many times. FLASH memory does not require batteries to maintain the data written to it. When deployed in Ballot Now, the MBB contains:

- Election identification and Election signing key
- All possible ballot types in all required languages for the jurisdiction
- A list of polling places, precincts, and allowable ballot types for each
- Audit logs
- Cast vote records (CVRs)

Flash memory cards can be purchased from Hart InterCivic or from vendors approved by Hart InterCivic. Contact Hart InterCivic for the approved vendors list.

Tally

Tally is a software application that reads, stores, and tabulates the CVRs from the MBBs. At the close of polls on Election Day, all of the MBBs are returned to the central location, including early voting MBBs, where Tally copies the data stored on each MBB into the election's Tally database. The MBBs contain CVRs captured by Ballot Now, and audit trail data that authenticates the CVRs. Tally is initialized with the locked BOSS database that was used to create the election. This initialization "programs" Tally for tabulation. The only required task prior to reading MBBs into Tally is to print the Cumulative Report to create a zero count report from Tally. The only task prior to beginning the tabulation process is to input any approved write-in candidate names.

Refer to the *Tally Operations Manual 6100-049* for detailed instructions.

Vote-PAD System:

- Vote-PAD booklets
- Preparation tools
- Polling place tools
- Verification wand
- Vote-PAD User's Guide
- Poll Workers' Guide
- Vote-PAD Instruction Assistant

Vote-Pad booklet. The spiral-bound Vote-PAD booklet contains a privacy shield and one or more clear ballot sleeves designed to accommodate the paper ballots produced by the Hart Voting System. A page-turning aid is attached to each ballot sleeve and to the front cover to assist voters in turning the pages.

Preparation tools.

- A punch matching the size and shape of the voting positions on the Hart ballot, a plastic anvil, and a larger punch for write-in positions.
- A small (1/8") punch to produce alignment holes to ensure ballots are correctly inserted into the sleeve(s).
- Bumpons – ovals (small oval rubber indicators) to indicate the various voting positions to the voter.
- Bumpons – triangles (triangular rubber indicators) used to indicate the top and bottom of each column on the ballot.

Polling-place tools.

- Braille Overview booklet
- Audio Overview tape
- Large-Print Overview booklet
- Poll Workers' guide
- Telex Narrator tape player/headset
- Verification Wand Version
- Non-skid mats
- Magnifier
- Extra bumpons (ovals and triangles)
- Vote-PAD Poll Workers' Quick Reference Guide

Verification wand. A battery powered hand-held device that allows visually-impaired voters to review their selection. As the voter replays the audiotape or re-reads the Braille or large-print instructions, the voter touches the wand to each marking location to receive feedback indicating whether the location is marked. The wand vibrates when it senses a mark and is still when there is no mark.

Vote-PAD User's Guide. The User's Guide contains complete instructions on preparing Vote-PAD booklets for use at the polls, as well as instructions for the preparation of the audio tape and the Braille or large-print instructions. Reference is made to the User's Guide, which is incorporated as part of these procedures.

Poll Workers' Guide. The Poll Workers' Guide contains complete instructions for the poll workers on setting up the Vote-Pad for each voter, the use of the Vote-Pad by the voters, and processing voted ballots. Reference is made to the Poll Workers' Guide, which is incorporated as part of these procedures.

Vote-Pad Instruction Assistant Version. The Instruction Assistant creates the text for the audiotape, Braille, and large-print instructions. The Assistant is a set of Microsoft Excel macros designed specifically for the Vote-PAD, used in conjunction with a commercial Text-to-Speech (TTS) program, NaturalSoft. Since the processing is done by Excel macros, the source code of the macros is available for examination. (*Note: The audiotape, Braille, and large-print instructions may be prepared manually without the aid of the Instruction Assistant.*)

1.2 Terms and Definitions

Ballot sleeve – a clear plastic sleeve designed to hold a ballot in a specific alignment. The sleeve has navigation aids (bumpons) attached to allow the visually impaired (following audiotape, Braille, or large-print instructions) to find voting positions of the ballot's candidates and measures. The bumpons indicate the location of holes in the ballot sleeve that correspond to the voting positions on the ballot, enabling voters to mark their choices accurately on the paper ballot.

Braille Instructions – direct the visually impaired voter to the locations of the ballot's various races and measures. These instructions can be prepared manually or with the Vote-PAD Instruction Assistant.

Audio Instructions – direct the visually impaired voter to the locations of the ballot's

various races and measures. These instructions can be prepared manually or with the Vote-PAD Instruction Assistant on audiotapes or electronic media.

Large-Print Instructions – direct the visually impaired voter in large-type font (28 point bold, Ariel) to the locations of the ballot’s various races and measures. These instructions can be prepared manually or with the Vote-PAD Instruction Assistant.

Verification wand – a hand-held battery-powered device visually impaired voters use to verify that they have successfully marked their ballots. When placed on a voted position, the device vibrates. When no marks are present, the device is silent. After marking the ballot, the voter uses the wand while simultaneously following the instructions (audio, Braille, or large-print) the voter used to mark the ballot, placing the wand on each voting position to determine if the ballot is correctly marked. The voter will also be able to use the verification wand to determine that the ballot has been properly positioned in the ballot sleeve.

Privacy Shield – an opaque plastic shield that slides out from the Vote-PAD cover to ensure the secrecy of a ballot when it is deposited in the ballot box.

Identification Labels – labels attached to the Vote-PAD booklet, the audio instructions and other instruction material indicating ballot type and precinct information to ensure that the correct instructions and ballot are matched to the Vote-PAD for each voter.

Punch and Plastic Anvil – tools used to create alignment holes in the ballot sleeve at the voting positions of the various races and measures contained on the ballot.

Alignment Holes – holes in the ballot sleeve at the voting positions on the ballot.

Bumpsons – rubber ovals and triangles to enable the visually impaired to locate the various contests contained on the ballot. The ovals are placed at each voting position and the triangles at the top and bottom of the columns on the ballot.

Text-to-speech program – third-party software (NaturalSoft), used with the Instruction Assistant, to produce the audio files used by visually impaired voters.

Write-in Sheet – a separate sheet that may be used by the voter as an aid to writing in a candidate. The sheet has an embossed grid with Braille and printed numbers and letters. The audio, Braille and large-print instructions describe the use of the write-in sheet to the voter.

Page-turning Aids – plastic-covered metal clips attached to the front cover and each ballot sleeve of the Vote-PAD to aid in turning the pages.

Voting position – the area on the ballot used to indicate a voter’s choice.

Non-skid pad – a rubberized pad that keeps the Vote-PAD still for ease of use.

“Guide to Content Choices” – the data in the audiotape, Braille, or large-print instructions.

Security Seal – a tamper-proof seal with an unique Identification number. The seal must be designed so it is readily apparent if it has been opened after being affixed.

Cast Vote Record (CVR) – an electronic version of a voted ballot that contains the information on how contests were voted. In Ballot Now, contains information on how contests were voted, including any resolutions that were needed during the resolve process.

Ballot Now – the Hart paper ballot system

eCM (eSlate Cryptographic Module) – a physical Spyrus USB security key provided by Hart InterCivic

cCM Manager – a security key application used by Hart to generate signing keys

2 Ballot Definition

2.1 Overview

Preparing for an election begins with entering information into BOSS. Typically, jurisdictional information such as precinct and polling place names is entered prior to an election cycle. Once an election cycle begins, election-specific information is entered into BOSS. The BOSS election database is configured to define political parties and ballot instructions.

After the ballot information has been input, ballot content is proofed using the reports produced by BOSS, including review of all ballot styles, and ballot layouts are viewed or printed with the BOSS preview feature. At this point, changes can easily be made to the ballot data and/or layout. When ballot content and layout have been verified, ballot generation produces the electronic ballot data file that contains all the ballot styles necessary for conducting the election at any polling location and for printing paper ballots with Ballot Now. The Hart VS proprietary data file is written to multiple PC card memory devices called the Mobile Ballot Boxes (MBBs).

BOSS requires authentication from the election's security keys in order to generate the data file. This file is written to the MBBs. In Ballot Now, the MBB is used to print paper ballots, scan paper ballots, resolve scanned ballots, and record CVRs from scanned, resolved ballots. The MBBs are used to return the ballot images captured by Ballot Now for tabulation by Tally. Once BOSS generates the data file for the MBB, the BOSS election database becomes locked automatically so that no more changes can be made to the ballot data, thus protecting the integrity of the data that will be written to MBBs.

Each MBB contains:

- The same information so that they can be used in any location
- All possible ballot styles for the jurisdiction
- A list of polling places and precincts, and allowable ballot styles for each
- Ballot format information for scanning ballots with Ballot Now
- Encrypted serial number and election ID.
- Cryptographic signing key for the Election

2.2 Paper and Printing Specifications

Paper ballot dimensions are set in BOSS. Paper ballot printing is done in Ballot Now. Printing of ballot serial numbers must be turned off in Ballot Now before any ballots are printed. Printing specifications for printing ballots from Ballot Now are described in the Hart InterCivic document titled *Ballot Now Ballot Printing Specification 6000-261 Rev.*

A. Paper stock for printed ballots is specified in California Election Code §13002, which describes tints and watermarks required for each election.

2.3 Layout Requirements and Specifications

Layout for Ballot Now paper ballots is defined in BOSS by selecting one or more templates before the data file for the MBB is generated. Templates contain the language and the number of columns for the electronic and paper ballots, and the paper size for the paper ballots.

3 System Installation and Configuration

3.1 Hardware Requirements and Specifications

3.1.1 BOSS Hardware Requirements

BOSS runs on Windows 2000 Professional, Service Pack 3. Various third-party drivers for PCMCIA slots are required for installation. The installation of a third-party database is required. Third-party software is also used for print preview functions.

BOSS is capable of running on any standard PC with the following minimum system configuration:

- 1 GHz Pentium 4 system processor
- 512 MB of RAM
- One (1) 40 GB Hard disk
- CD-ROM drive
- Laser or ink jet printer
- USB/Parallel interface to support report printer
- Monitor screen resolution set to 1024 x 768 or higher
- One or more ATA flash card drives
- One (1) Spyrus USB security key provided by Hart InterCivic and USB port

Recommended hardware configuration:

- 2GHz Pentium 4 processor
- 1G of RAM
- 1280X1024 screen resolution
- 12/24 GB DAT Tape Drive or CD/RW drive
- One (1) non-interruptible power supply (UPS) (for the event of a power outage) capable to power the computer for sufficient time to stop the current process in the application and shut down the computer
- All else configured as described above

3.1.2 Tally Hardware Requirements

Tally runs on Windows 2000 Professional, Service Pack 3. Various third-party drivers

for PCMCIA slots are required for installation. The installation of a third-party database is required. Tally is capable of running on any standard PC with the following minimum system configuration:

- 1 GHz Pentium 4 system processor
- 512 MB RAM
- 1024 x 768 display resolution, High color (16 bit)
- 30 GB hard drive
- R/W CD drive
- One or more ATA flash card drives
- Standard Parallel port to support real-time audit log
- USB/Parallel interface to support report printer
- Audit line printer
- Report printer
- Communication Port
- One (1) Spyrus USB security key provided by Hart InterCivic and USB port

Recommended hardware configuration:

- One (1) non-interruptible power supply (UPS) (for the event of a power outage) capable to power the computer for sufficient time to stop the current process in the application and shut down the computer
- All else configured as described above

3.2 Hardware and Network Set-up and Configuration

Hardware configuration is performed by Hart InterCivic personnel to ensure that operation and security standards for the network and hardware configuration are met. In a large jurisdiction, Ballot Now can be run on a server and multiple clients for resolving voted ballots. Communication between the Ballot Now server and a client is protected by security certificates through SSL. Each network of a Ballot Now server and its clients must be physically separate.

3.3 Software Installation and Configuration

The Microsoft Excel macros used by the Vote-PAD Instruction Assistant requires a PC running Microsoft Excel and should not be installed on the hardware running the Hart system components (BOSS, Ballot Now, Tally). The same is true of the NaturalSoft Text-To-Speech software. These programs are not used in the production of ballots, counting of ballots, or reporting of results. Their sole purpose is to aid in the preparation of the audio, Braille and large-print instructions.

Software installation and configuration is exclusively performed by Hart InterCivic personnel. For the State of California, the following options will be set during installation as indicated below:

- BOSS application must have the printing of a serial number in the Ballot Key field in the layout for the
- printout from the VBO disabled.
- Tally application must be installed with the options to allow parsing of retrievable

- and provisional ballots
- Tally application must have the requirement for a line printer for the real-time audit logs changed to write the audit logs to a FILE

3.3.1 User IDs, Passwords, and Permissions

After installation of each Hart Voting System software application, the jurisdiction creates new users for the software application, then deletes the user defined by Hart InterCivic. BOSS users are created by the jurisdiction. See the Hart InterCivic *Ballot Origination Software System Operations Manual* 6100-019 Rev. 42-60B and *Ballot Origination Software System Training Manual* 6300-002 6XA. Ballot Now users are created by the jurisdiction. See the Hart InterCivic *Ballot Now Operations Manual* 6100-067 Rev. 32-60B and *Ballot Origination Software System Training Manual* 6300-002 6XA. Tally users are created by the jurisdiction. See the Hart InterCivic *Tally Operations Manual* 6100-049 Rev. 42-60B and *Tally Software Training Manual* 6300-005 6XA.

3.4 Acceptance Testing

Because there is no computer hardware included with Vote-PAD, acceptance testing will consist of using the User's Guide to prepare Vote-PAD booklets and audio, Braille, and large-print instructions and then using the logic and accuracy process to verify that the booklets and instructions properly match the test ballots (a mock election set up in Hart system components will provide data for this testing). The logic and accuracy testers will follow the Poll Workers' Guide to determine that the Guide is complete and covers all contingencies. The results of this testing will be forwarded to the Secretary of State as required.

3.5 Software and Firmware Upgrades

Software upgrades to Instruction Assistant and NaturalSoft will be forwarded to the Secretary of State for distribution by that office. Upgrades will replace existing files on each PC using the programs. As upgrades are installed, logs will indicate the version numbers and dates of upgrade. The logs shall be maintained for inspection.

Software and firmware upgrades to the Hart Voting System are performed only by Hart InterCivic personnel only after certification by the Secretary of State. Operating system upgrades to the computers on which the Hart Voting System applications are installed are performed only by Hart InterCivic personnel only after certification by the Secretary of State. Anti-virus software installation is installed only by Hart InterCivic personnel, but updates to definitions may be performed by the jurisdiction personnel.

4 Election Set-up and Definition

4.1 Programming and Configuration of Election Management System/Software, Including Audit Records to be Generated and Retained

A database for the election is created in the Ballot Origination Software System (BOSS) software, a component of the Hart Election Management System. The BOSS application user interface is described in the Hart InterCivic *Ballot Origination Software System*

The procedures for using BOSS to create a database for an election are described in the Hart InterCivic *Ballot Origination Software System Training Manual 6300-002 6XA*.

The steps for creating a BOSS election database include:

- Gather data for creating the BOSS election database.
- In BOSS:
 - Create a new election database
 - Enter all jurisdiction information into the BOSS election database
NOTE: The jurisdiction information can be done in advance of an election cycle. This information can be saved as a starting point for future elections.
 - Enter all election information into the BOSS election database.
 - Proofread all information entered into the BOSS election database.
 - Generate ballot formats from the election database, preview/print the ballot layouts and proof them.
 - Make necessary corrections to the ballot layouts.
 - Generate ballot formats and accept them.
NOTE: Accepting the ballot formats for a BOSS election database writes the signing key from the eCM installed in the BOSS PC to the election database and changes the BOSS data entry fields for election definitions to display-only.
 - Create test or official MBBs. The Hart InterCivic *Ballot Origination Software System Training Manual 6300-002 6XA* contains recommendations for how to figure how many MBBs should be written for an election.
NOTE: The election's signing key is written to each MBB.
 - Lock the election database for use with Tally.
NOTE: After the election database is locked for use with Tally, no more MBBs or Audio cards can be written from the BOSS database.

Each MBB for the election can configure Ballot Now to print paper ballots and record cast vote records. Ballot Now can print paper ballots to PostScript files for delivery to a print vendor. Use of Ballot Now to print ballots is described in Section 6.1.2 Printing Ballots. The same MBB used in Ballot Now is used to return the cast vote records to Election Headquarters for tabulation by Tally.

4.2 Programming and Configuration of Vote Recording/Tabulation Devices, Including Audit Records to be Generated and Retained

Paper ballots are printed and processed for CVRs by the Ballot Now application. Ballot Now is designed to support paper-based voting, either as a stand-alone system for smaller entities or to complement the Hart Voting System suite of products. Ballot Now manages a print-on-demand capability to print ballots for testing, sample ballots, and official ballots for delivery to the voter. The same information used to print the ballot is used to define a digital scanning template for processing ballots upon their return. Once the voter returns a marked ballot, Ballot Now uses a high-speed scanner to create electronic images of the paper ballot, and then applies voting logic to the digital image and extracts the Cast Vote Record.

Ballot Now provides functionality to:

- Apply voting logic to preview and resolve overvoted and undervoted ballots and write-ins
- Electronically store election records
- Manage the process of writing Cast Vote Records (CVRs) into the MBB for transfer to Tally for tabulation
- Supply a variety of reports about the ballot processing and related activities that can be viewed and printed at any time

Ballot Now is to be used only as central processing application and is not to be deployed to remote locations outside of central jurisdiction election headquarters.

Ballot Now receives data from BOSS via the Ballot Now MBB and delivers data to Tally via the Ballot Now MBB. The system receives input from the user and from scanned ballots, and provides the user with reports.

Tally reads the CVRs from Ballot Now MBBs and allows reports to be generated that:

- Keep Absentee votes separate from Early Voting votes and from Election Day votes
- Combine Absentee and Early Voting votes, and keep Election Day votes separate
- Combine Absentee, Early Voting, and Election Day votes

The following reports should be generated and printed for retention as part of the election records:

- Election report — Election name; Ballot Now state (Opened, Closed); jurisdiction; date; MBB serial number; public counter; Ballot Now private counter; and total number of scan batches
- Election MBBs report — list of MBBs in the Election
- Scan Batch Report — for each page of the ballots in a scan batch, lists whether Ballot Now accepted or rejected the page
- Deleted Batches report — list of deleted batches
- Scan Batch Summary report — summary information for each batch of ballots
- Printed Ballots by Precinct report — for each printing session: the precinct name and the date, time, user ID, starting serial number, ballot type, language, and number of ballots printed; sorted by precinct
- Scanned Ballots by Precinct report — for each precinct: the scan batch IDs and numbers of scanned ballots that are unresolved, resolved, written to the MBB, and not yet processed by BNIP; sorted by precinct
- Scanned Ballots by Batch report — for each scan batch: the scan batch ID, the user ID, date and time associated with the scan batch, and numbers of scanned ballots that are unresolved, resolved, written to the MBB, and not yet processed by BNIP; sorted by scan batch number
- Resolve Status Report — for each scan batch: the scan batch ID, the user ID, date and time associated with the scan batch, number of ballots unresolved, resolved, and not yet processed by BNIP; sorted by scan batch

- Deleted Ballots report — list of deleted ballots
- Certified Write-Ins report — list of certified write-ins entered for all write-in contests

4.3 System Diagnostic Testing Procedures, Including Audit Records to be Generated and Retained

After the election's Tally database is created in Tally, zero reports are printed and reviewed before MBBs are read into Tally.

4.4 System Proofing

System proofing for the Vote-PAD consists of verifying that the holes in the ballot sleeves match the voting positions for the intended ballot type and that the booklet and associated instructions are properly labeled by ballot type and polling place. The elections official will insert the correct type of ballot into each prepared sleeve to visually check that the voting positions on the sleeve exactly match the voting positions on the ballot. Once the system has been proofed a security seal will be placed on the booklet to ensure that the booklet is not tampered with after creation and testing. A log will be kept with the time, date, and names of the officials who attach the seal and perform the testing.

Proofing of ballots is performed in BOSS.

- Generate BOSS reports and compare the data to the information gathered and organized prior to data entry:
 - Active Contests Options List Report
 - Ballot Content Proof Report
 - Ballot Style List by Precinct Report
 - Ballot Style List by District Report
 - Contest List With Details Report
 - Assigned Precinct Report
 - Polling Place List - Early Voting - Detail Report
 - Polling Place List - Early Voting - Summary Report
 - Polling Place List - Election Day Voting - Detail Report
 - Polling Place List - Election Day Voting - Summary Report
 - Precinct List Report
- Check for all Contests on ballot and candidate/proposition spelling is correct
- Verify the correct number of votes allowed in each contest
- Verify that write-in positions are correct

4.5 Logic and Accuracy Testing of System and Components

Because there is no computer hardware included with Vote-PAD, acceptance testing will consist of using the User's Guide to prepare Vote-PAD booklets and audio, Braille, and large-print instructions and then using the logic and accuracy process to verify that the booklets and instructions properly match the test ballots (a mock election set up in Hart system components will provide data for this testing). The logic and accuracy testers will follow the Poll Workers' Guide to determine that the Guide is complete and covers all contingencies. The results of this testing will be forwarded to the Secretary of State as

required.

4.5.1 Pre-conditions for Performance of Tests, Including Test Decks

The operation of Ballot Now computers and scanners must be verified prior to deploying the equipment. Each piece of equipment must have power applied to verify that it reaches the ready state in the power-up cycle. This indicates that the equipment is functioning properly and has passed the resident power-up diagnostics.

4.5.2 Accuracy Test Procedures

Accuracy testing consists of those procedures necessary to ensure hardware and software to be used in the election are working properly, both as individual units and as a combined system. Instructions for performing the accuracy test are described in the Hart InterCivic *Hart Voting System Support Procedures Training Manual* 6300-006 6XA.

Not more than 10 days before Election Day, the local election official shall have the entire system tested to ascertain that it will count properly the votes cast for all offices and all questions. Successful testing will demonstrate that each candidate and ballot measure receives the proper number of votes, that the system accepts only the proper ballot types, and that all tabulations are reported accurately. In the case of offices for which the voter is allowed to vote for more than one candidate, at least one ballot shall be voted with the maximum allowed number of choices.

All ballot logic and accuracy functions of the Hart VS are static. This means that the functions are compiled, tested and verified as part of extensive system testing and certification processes and do not change between elections. The only element of the system that changes from one election to the next is the content and format of the ballots. The responsible elections official shall prepare the following accuracy test deck to be prepared and tested. Predetermined results of accuracy test must be available for inspection and sign-off by the Logic and Accuracy Board.

Accuracy testing of the Vote-PAD system begins with using the verification wand to 'read' unmarked ballots; each voting position should register as unmarked when 'read' by the wand. Next, a ballot—with at least one position for each candidate and measure marked using the Vote-PAD—is 'read' with the verification wand; the wand should 'read' the marked positions only. Another ballot will be fully marked (each voting position marked) with a marking device that leaves residue on the ballot sleeve at each voting position to ensure that anyone using the Vote-PAD will not be able to determine how a previous user has voted; the verification wand must 'read' all voting positions as marked. The ballots marked with the Vote-PAD should be removed from the Vote-PAD booklet and reviewed to determine that the marks correspond to the valid voting positions on the ballot. These ballots will be run through a scanner attached to a Ballot Now computer and tabulated by Tally. The Tally results will be compared with the ballots to ensure that each vote was properly read by the scanner.

4.5.3 Logic Test Procedures

Ballot logic is verified by the jurisdiction using their Ballot Inspection and Verification

process.

4.5.4 Retention of Test Materials

Copies of the Cast Vote Records and the accumulated results from the logic and accuracy tests shall be retained in secure locations designated by the jurisdiction for as long after the election as required by law or by order of a court or directive of the Secretary of State.

The test ballots created with the Vote-PAD shall be retained separately from the balance of the test ballots.

4.5.5 Logic and Accuracy Board and Certification of Testing

Accuracy tests shall be performed prior to Logic and Accuracy Certification to the Secretary of State and again within 72 hours prior to tabulation on Election Day. In the event of hardware failure and the component has been repaired, replaced, or adjusted, the accuracy test should be re-run. The test shall be conducted using a pre-determined test script of at least one vote for each possible selection within an office or question. The test script must test all possible candidates or questions for each precinct. If the central tabulating system does not accurately count the test script or test vote, the cause for the error shall be as ascertained and corrected, and an errorless count shall be made before the system is approved for use of counting votes.

The logic and accuracy board will review the materials produced by the testing of the ballots marked with the Vote-PAD booklets. They shall also review the audio and large-print instructions to verify that the instructions correctly identify the voting positions on the ballot and on the Vote-PAD booklet. If necessary, an independent party trained in reading Braille shall provide documentation that the Braille instructions match the voting positions on the ballot.

4.6 Ballot Tally Programs

The Tally software, a component of the Hart Election Management System, is used to record and tally Cast Vote Records from the election's MBBs. A Tally database is initialized with the locked BOSS database that was used to create the election. This initialization "programs" Tally for tabulation of election results. After the election's Tally database is created in Tally, zero reports are printed and reviewed before MBBs are read into Tally. The only required task prior to beginning the tabulation process is to input into the election's Tally database any approved write-in candidate names. In compliance with EC §15001, a copy of the Tally software executable is deposited with the Secretary of State as a requirement of certification of the Hart Voting System.

4.7 Election Observer Panel

Each candidate, and each side in the case of a ballot measure, shall be allowed not more than two observers for each election testing board, and may not touch or handle the transport media. All questions must be directed to the elections official in charge of the election testing.

4.8 Hardware Maintenance and Preparation for Use

Maintenance procedures are minimal. Any problems detected in functionality testing should be re-tested, logged, and equipment returned to Hart InterCivic for replacement. There are only a few regularly scheduled maintenance procedures necessary:

- Cleaning the equipment screens
- Checking battery levels
- Performing functionality tests
- Other repair, replacement, and miscellaneous maintenance procedures
- PC printer, Ballot Now PC scanner, and PC peripheral maintenance

Details of hardware maintenance procedures are described in the Hart InterCivic *Hart Voting System Support Procedures Training Manual* 6300-006 6XA.

Each verification wand should be tested (ideally as part of the logic and accuracy testing) and fresh batteries should be installed. The tape player shall be checked and the batteries replaced, if required.

5 Polling Place Procedures

5.1 Precinct Supplies, Delivery and Inspection

Assigned poll worker:

- picks up supplies at the time arranged by the Elections Office
- checks that the ballots match the ballot receipt and calls the Elections Office immediately if there is any discrepancy
- checks that sample ballots match the real ballots
- records the total number of ballots received on line 1 of the Ballot Statement on the back of the Roster
- checks that all forms and envelopes have the precinct number and writes it in if it is missing
- verifies that equipment has been delivered to the polling place by 5:00 P.M. on the Monday before the election and calls the Elections Office immediately if any equipment is missing

For each ballot type, polling place receives and poll worker inspects:

- One sealed Vote-PAD booklet (depending on the number of expected disabled voters more than one Vote-PAD may be required), containing a sample ballot. Poll worker uses the sample ballot to verify that there is a hole at each voting position and write-in space; that there is a bumpon adjacent to each voting position; and that there are triangular bumpers at the top and bottom of each column in which there are voting positions. Poll worker replaces any missing bumpers.
- An audiocassette "Guide to Contest Choices"
- A Braille "Guide to Contest Choices"
- A large-print "Guide to Contest Choices"
- Write-in sheets
- One non-skid pad

For each polling place, poll worker receives and inspects:

- At least one tape player with headset
- Verification wand

- Removable tape
- Magnifier
- Foam grips for pen
- Unused foam ear pads for the headset
- Spare (fresh) batteries for the tape player and verification wand
- Stapler

5.2 Polling Place Set-up

Poll workers:

- set up ballot booths and worktable(s)
- place voting booths and ballot box so they are easily visible from the worktable
- attach the ID tag to the ballot box handle
- put voting pen in each voting booth
- post indoor and outdoor signs
- sign all documents needing signatures and put on name tags
- place Eligible Voter List, Roster, pens, starting ballot pads, and secrecy folders ready on worktable
- put Sample Ballots, Voter Guides, and other reference materials where voters can consult them

At least one voting station shall provide sufficient space to accommodate an open Vote-PAD booklet and verification wand, with the tape player and/or Braille or large-print instructions in easy reach. The station shall provide privacy and seating and be accessible to voters in wheelchairs.

5.3 Opening the Polls

At 7:00 A.M. poll worker declares that the polls are open and invites first voter(s) to verify that unlocked ballot box is empty. Poll worker then locks ballot box.

5.4 Polling Place Procedures

Voter List Officer asks voter's name, finds voter in List of Eligible Voters. Voter signs next available line of Roster and receives next available ballot and a manila secrecy folder from Roster/Ballot Officer. Voter List Officer enters voter's Roster line number in tally column before assisting next voter.

As instructed by Roster/Ballot Officer, voter deposits voted ballot (but not stub or secrecy folder) in ballot box.

If a voter spoils ballot, Ballot/Roster Officer accepts spoiled ballot in white envelope from voter and issues replacement ballot of same type. Voter does not sign the Roster on receiving the replacement ballot.

Yolo County absentee envelopes are deposited in ballot box after Ballot Box Officer reminds bearer that the envelope must be sealed and properly executed.

A voter listed as AV in the Eligible Voter List may not be issued a ballot at the polling place unless the voter is able to surrender the absentee ballot or votes a provisional ballot.

If voter surrenders absentee ballot, Voter List Officer writes 'surrendered' over the AV notation next to the voter's name, voter signs Roster and receives next available ballot of correct type, poll worker writes 'surrendered' on voter's absentee envelope, and poll worker places surrendered envelope in manila envelope B.

If voter cannot surrender ballot and wishes to vote, voter is offered a provisional ballot.

Hourly (until 7:00 P.M. if possible) poll worker updates the posted index by lining through the names of voters who have voted. Poll worker then re-posts the index in the entryway.

5.5 Special-needs Voters

Voters who need physical help to vote their ballots may be assisted in the voting booth by the person(s) they choose. If the person assisting the voter will be marking the voter's ballot, that person must sign the Assisted Voters List.

A voter unable to enter the polling place shall be offered curbside voting. A precinct officer first brings the Eligible Voter List and Roster out to the voter for signature, then brings the voter's ballot and secrecy folder, waits until voter has finished, and carries voted ballot in its secrecy folder to ballot box.

Voters with limited dexterity and visually impaired voters will be allowed to vote using the Vote-PAD booklets along with the audio, Braille, and large-print instructions and write-in sheets, if needed. If used, the write-in sheet shall be stapled to the voted ballot before being deposited in the ballot box.

5.6 Provisional voters

5.6.1 In Precinct

Election law provides for a ballot to be issued provisionally if a voter is not on the Eligible Voter List. A person who will vote provisionally signs the pink Roster pages and fills out the voter's side of the pink Provisional Envelope and, if necessary, a registration card. On other side of the Provisional Envelope, Voter Assistance Officer enters precinct number, reason for issuing a provisional ballot, and, in a primary, party issued. Poll worker then issues ballot and pink secrecy folder, retaining paperwork and instructing voter to bring voted ballot in its folder back to the table for insertion into envelope. Poll worker oversees that voter seals ballot into envelope, leaving registration card in outer pocket. Voter then deposits envelope in ballot box.

5.6.2 Out of Precinct

Before following the same procedures as for an in-precinct provisional voter, poll worker first alerts the voter that the ballot issued may not match the ballot the voter would receive at the voter's own polling place.

5.7 Closing the Polls and Vote Reporting

At 8:00 P.M. poll worker announces that the polls are closed. If there is a line of voters waiting to sign-in, a poll worker stands at the end of the line and informs any subsequent arrivals that the polls have closed.

After all voters have left the polling place, poll workers bring in all outside signs, take down indoor signs, disassemble voting booths and put away unneeded materials before counting the unused ballots or opening the ballot box to count voted ballots.

Poll workers:

- enter the total number of ballots received from the Elections Office on line 1 of the Ballot Statement and the number of the last used signature line in the Roster on line 7 of the Ballot Statement
- count unused ballots and enter the new total both on line 2 and on the tamper-proof label
- put all unused ballots and any partially used pads in unused ballot bag and seal the bag
- open the ballot box and remove all ballots, separating them into three piles: regular (loose) ballots; absentee envelopes; provisional envelopes
- count the absentee envelopes, seal them in manila envelope C, and write the total enclosed on the manila envelope
- count the provisional envelopes, seal them in manila envelope A, and record the total on line 4 of the Ballot Statement
- count the spoiled ballots in manila envelope B and write the total on line 3 of the Ballot Statement
- count the regular ballots and enter the total on line 5 of the Ballot Statement
- add lines 2 + 3 + 4 + 5 and write the total on line 6 of the Ballot Statement. If lines 1 and 6 don't match, poll workers recount as needed until the numbers match. If your numbers still don't match, poll workers must write an explanation for the discrepancy on the Ballot Statement or, if the count is off by more than 3, bring all materials to the drop-off site for assistance from Elections Office personnel.
- place the voted regular ballots in their box), secure the box with a signed tamper-proof seal, and write the total number of ballots enclosed (from line 5) on the label on the front of the box

5.8 Securing Audit Logs and Back-up Records

Poll workers:

- Fill in the drop-off receipt and the Certificate of Packaging and Sealing, setting aside the drop-off receipt for delivery to the drop-off site. A poll worker who will not accompany the ballots to the drop-off site mails the postcard-copy of the signed Certificate of Packaging and Sealing to the Elections Office.

- Use the checklists to verify that all essential materials (Roster, Oath, Eligible Voter List, Certificate of Packaging and Sealing; drop-off receipt; voted ballots; unused ballots; spoiled ballots; surrendered ballots; Vote-PADs; and Vote-PAD instructional media) have been packed for transport to the drop-off site before sealing the envelope with a signed tamper-proof seal

5.9 Troubleshooting and Problem Resolution

Poll worker inspects Vote-PAD booklets before issuing to voter. If inspection of Vote- identifies missing bumpons, poll worker applies replacement bumpons from supplies. If inspection identifies any other problems, poll worker notifies Elections Office immediately.

If tape player or verification wand fails to work properly, poll worker replaces batteries from supplies, and, for tape player, checks that headset jack is fully inserted into correct outlet. If unable to correct problem, poll worker issues another tape player/wand and notifies Elections Office immediately.

6 Absentee/Mail Ballot Procedures (Central Tabulation)

Paper ballots for absentee/mail are printed and processed for CVRs by the Ballot Now application. Ballot Now is designed to support paper-based voting, either as a stand-alone system for smaller entities or to complement the Hart Voting System suite of products. Ballot Now manages a print-on-demand capability to print ballots for testing, sample ballots, and official ballots for delivery to the voter. The same information used to print the ballot is used to define a digital scanning template for processing ballots upon their return. Once the voter returns a marked ballot, Ballot Now uses a high-speed scanner to create electronic images of the paper ballot, and then applies voting logic to the digital image and extracts the Cast Vote Record.

Ballot Now provides functionality to:

- Apply voting logic to preview and resolve overvoted and undervoted ballots and write-ins
- Electronically store election records
- Manage the process of writing Cast Vote Records (CVRs) into the MBB for transfer to Tally for tabulation
- Supply a variety of reports about the ballot processing and related activities that can be viewed and printed at any time

Ballot Now is to be used only as central processing application and is not to be deployed to remote locations outside of central jurisdiction election headquarters.

6.1 System Start-up and Pre-tabulation Report Procedures

Ballot Now receives data from BOSS via the Ballot Now MBB and delivers data to Tally via the Ballot Now MBB. The system receives input from the user and from scanned ballots, and provides the user with reports.

6.1.1 Paper Ballot Templates

The ballot content and layout for all paper ballots for an election are defined and proofed in BOSS. After the ballot information has been input into BOSS:

- Ballot content is proofed using the reports produced by BOSS, including review of all ballot styles
- Ballot layouts are viewed or printed with the BOSS preview feature

At this point, changes can easily be made to the ballot data and/or layout.

When ballot content and layout have been verified, the templates for paper ballots are selected for generating ballot data for the MBBs. Multiple paper ballot templates are available for selection of paper size, number of columns per page, and language to print on the ballots. When paper ballot templates are selected for generating the ballot styles, BOSS automatically adds a polling place named Ballot Now so that at the time of tabulation in the Tally application, Tally will read MBBs that contain CVRs processed by the Ballot Now application. The Hart VS proprietary data file is written to multiple MBBs. At least one MBB is reserved for use with Ballot Now.

6.1.2 Printing Paper Ballots

Detailed instructions for printing ballots from Ballot Now are described in the Hart InterCivic *Ballot Now Operations Manual* 6100-067 Rev. 32-60B and the *Ballot Now Software Training Manual* # 6200-003 6XA.

Brief steps are presented below.

An election database is created in Ballot Now by reading an Election mode MBB from the election and providing the password for the signing key carried on the eCM installed in the Ballot Now PC.

1. The election database is opened in Ballot Now and printing options are defined.
2. The Program Options command is selected from the Election menu to open the Program Options window.
3. The Ballot Printing tab is clicked in the Program Options window.
4. The check box for Readable Serial Numbers on Ballot must be de-selected.
5. Other preferences for printing ballots are selected through the Ballot Printing tab:
 - Select Printer – for selecting the printer that can print the ballots on the correct paper size
 - Print Duplex Ballot – for printing both sides of the paper
 - Include and Set Up Ballot Stub – for printing a ballot stub on the ballots
6. The Save button in the Ballot Printing tab of the Program Options window is clicked.
7. The Print Ballots window is opened by selecting the Print Ballots command from the Print menu.
8. Each precinct's ballot can be previewed by selecting the precinct in the Print Ballots window, the Election ballot type, the language, the political party if the election is a primary election, then clicking the Preview button. A preview of the paper ballot appears in the Ballot Preview window.
9. To print Election ballots for a precinct, the following selections are made in the Print Ballots window:
 - The precinct is selected
 - The Election ballot type is selected

- The language is selected
 - The political party is selected if the election is a primary election
 - The number of copies is selected
 - The starting serial number is defined
10. The ballots are sent to the printer by clicking the Print button in the Print Ballots window.

6.1.3 Pre-Tabulation Report

The following reports should be generated and printed for the record before voted ballots are scanned by Ballot Now:

- The Election report lists the election name, status of the Ballot Now database, jurisdiction, election date, MBB serial numbers for Ballot Now MBBs, public counter, Ballot Now private counter, and total number of scan batches in the Ballot Now database.
- The Printed Ballots By Precinct report lists for each printing session: the precinct name and the date, time, user ID, starting serial number, ballot style, language, and number of ballots printed. The report is sorted by precinct name.

6.2 Tabulation Procedures

Absentee/mail ballots are scanned in batches by Ballot Now to create a CVR for each ballot. Ballot Now flags ballots with contests that have overvotes, undervotes, and write-ins as needing to be resolved. Blank and damaged ballots also are flagged as needing to be resolved.

Ballot Now can be run on a server and multiple clients for resolving voted ballots. Communication between the Ballot Now server and a client is protected by security certificates through SSL. Each network of a Ballot Now server and its clients must be physically separate. When all ballots in all scan batches have been resolved, the CVRs can be written to the Ballot Now MBB, and the Ballot Now election database status is set to closed. The Ballot Now MBB is then delivered to Tally where it is read and tabulated for results.

6.3 Post-tabulation Report and Shutdown Procedures

Tally reads the CVRs from Ballot Now MBBs as “Absentee” votes and allows reports to be generated that:

- Keep Absentee votes separate from Early Voting votes and from Election Day votes
- Combine Absentee and Early Voting votes, and keep Election Day votes separate
- Combine Absentee, Early Voting, and Election Day votes

6.3.1 Post-Election Reports from Ballot Now

The following reports should be generated and printed for retention as part of the election records:

- Election report — Election name; Ballot Now state (Opened, Closed);

- jurisdiction; date; MBB serial number; public counter; Ballot Now private counter; and total number of scan batches
- Election MBBs report — list of MBBs in the Election
- Scan Batch Report — for each page of the ballots in a scan batch, lists whether Ballot Now accepted or rejected the page
- Deleted Batches report — list of deleted batches
- Scan Batch Summary report — summary information for each batch of ballots
- Printed Ballots by Precinct report — for each printing session: the precinct name and the date, time, user ID, starting serial number, ballot type, language, and number of ballots printed; sorted by precinct
- Scanned Ballots by Precinct report — for each precinct: the scan batch IDs and numbers of scanned ballots that are unresolved, resolved, written to the MBB, and not yet processed by BNIP; sorted by precinct
- Scanned Ballots by Batch report — for each scan batch: the scan batch ID, the user ID, date and time associated with the scan batch, and numbers of scanned ballots that are unresolved, resolved, written to the MBB, and not yet processed by BNIP; sorted by scan batch number
- Resolve Status Report — for each scan batch: the scan batch ID, the user ID, date and time associated with the scan batch, number of ballots unresolved, resolved, and not yet processed by BNIP; sorted by scan batch
- Deleted Ballots report — list of deleted ballots
- Certified Write-Ins report — list of certified write-ins entered for all write-in contests

7 Semi-Official Canvass Tabulation and Reporting

7.1 System Start-up and Pre-tabulation Reports

The Cumulative Report should be printed from the Tally election database to acquire zero counts before cast vote records from MBBs are read into Tally. The instructions for printing Tally reports are given in the *Hart InterCivic Tally Operations Manual* 6100-049 Rev. 42-60B and *Hart Voting System Support Procedures Training Manual* 6300-006 6XA.

7.2 Processing Vote Reports

Election results reports are generated in Tally. The results from MBBs read into Tally are labeled “Unofficial” until the jurisdiction has determined that all MBBs have been read into Tally; all provisional ballots have been assigned or rejected in Tally; and all write-in votes have been assigned or rejected in Tally. Instructions for using Tally and Rally are described in the *Tally Operations Manual* 6100-049 Rev. 42-60B and *Tally Software Training Manual* 6300-005 6XA.

7.2.1 Central Tabulation

On or before Election Day, the BOSS database for the election is used to initialize the Tally database for tallying the election. Acceptable write-in candidate names or aliases are input into Tally. When all the polls have closed, the MBBs from Ballot Now are read into the Tally System. The unique serial number in the MBBs is used to prevent duplicate storage of the information in the MBB.

The Tally System tabulates the Cast Vote Records from the MBBs and generates reports that can be viewed on screen and/or printed. The Tally database is closed and archived when the officials determine all information for the election has been stored and resolved in the Tally System.

7.2.2 Precinct Tabulation (as appropriate)

7.3 Integration with County Systems and Calvoter

Custom reports for precincts can be generated in Tally and exported from Tally in a delimited text file for use by the county and/or state.

8 Official Canvass and Post-Election Procedures

8.1 Election Observer Panel

Each candidate and each side in the case of a ballot measure, shall be allowed not more than two observers for each election results board and may not touch or handle the transport media. All questions must be directed to the elections official in charge of the election results.

8.2 Canvassing Precinct Returns

The Tally Canvass Report provides precinct returns.

8.3 Canvassing Absentee Ballots

The Tally Canvass Report provides absentee returns.

8.4 Canvassing Provisional Ballots

Votes cast as provisional ballots are accepted or rejected in the Tally system and reported with normal vote counts in the Tally reports. After the jurisdiction determines the eligibility of each voter who cast a provisional ballot, those ballots eligible for counting are processed to be included in results through Tally's Provisional Ballots screen. Using the Ballot Code from a provisional ballot's paperwork, the Tally operator locates the ballot in the list. The operator must then mark the ballot as "Included" and select the precinct that was determined as the precinct the voter was eligible to vote in. Detailed instructions for processing provisional ballots in Tally are provided in the Hart InterCivic *Tally Operations Manual* 6100-049 Rev. 42-60B and *Tally Software Training Manual* 6300-005 6XA.

8.5 Canvassing Write-in Votes

Tally provides reports of certified and uncertified write-in votes. The Tally operator defines the names of certified write-ins for each contest. Detailed instructions for processing write-in votes in Tally are provided in the Hart InterCivic *Tally Operations Manual* 6100-049 Rev. 42-60B and *Tally Software Training Manual* 6300-005 6XA.

On paper ballots scanned by Ballot Now, contests with write-in names are assigned or rejected during central count using Tally. The procedure for resolving write-ins in Ballot Now are described in the Hart InterCivic *Ballot Now Operations Manual* #6100-067 and *Ballot Now Software Training Manual* 6300-003 6XA.

8.6 1% Manual Recount Procedures

8.6.1 Sample Size

In accordance with EC §15360, for the purpose of validating the accuracy of the computer count, within fifteen days after every election a public manual recount of the ballots cast in at least one percent of the precincts, chosen at random, shall be conducted as to all candidates and ballot measures voted on in each of the precincts. If the random selection of precincts results in an office or ballot measure not being manually recounted, as many additional precincts as necessary shall be selected and manually recounted as to any office or ballot measure not recounted in the original sample.

8.6.2 Count Discrepancy

If a discrepancy is discovered between the automated tally and the automatic manual recount tally, the votes will be tabulated again by reading the MBBs into the Tally Election database.

8.7 Handling Ballot Exceptions

On ballots scanned by Ballot Now, obviously undervoted contests are automatically resolved as undervotes. The procedure for resolving undervoted contests in Ballot Now is described in the Hart InterCivic *Ballot Now Operations Manual* #6100-067 and *Ballot Now Software Training Manual* 6300-003 6XA. Undervotes can be included in Tally reports.

For all other ballot exceptions, Yolo County follows California's Uniform Vote Counting Standards listed below.

General Standards:

A. A ballot that is marked or signed by the voter in such a way that it can be identified from other ballots must be voided and none of its votes counted. Examples of such markings include, but are not limited to: voter signature, initials, voter name and address, voter identification number, social security number or driver's license number, messages or text, or unusual markings not related to indication of the vote choice for a contest. Generic text meant to clarify the voter's choice regarding a contest, such as the word "yes" or "no" next to a candidate's name, shall not be sufficient cause to void a ballot. If there are distinctly identifiable markings on one page of a multiple-page ballot, the entire ballot must be voided. (Elections Code §§13204, 14287, 15154, and 15208.)

B. A vote for any candidate or ballot measure shall not be rejected solely because the voter failed to follow instructions for marking the ballot. If, for any reason, it is impossible to determine the choice of the voter for any candidate or ballot measure, the vote for that candidate or ballot measure shall be considered void. (Elections Code §19001.)

C. A mark is considered valid when it is clear that it represents the voter's choice and is the technique consistently used by the voter to indicate his or her selections. Such marks may include, but are not limited to, properly filled-in voting position targets, checkmarks, X's, circles, completed arrows, or any other clear indication of the

voter's choice, such as the word "yes" next to a candidate's name or a voting position target for a ballot measure.

Conversely, a mark crossed out by the voter, or the word "no" next to a candidate's name or a voting position target for a ballot measure shall not be considered to be a valid vote but will, instead, be deemed an indication that the voter did not choose to cast a vote for that candidate or measure.

D. In determining the validity of a partially filled-in voting position target, the consistency

of a voter's marks on the entire ballot shall be taken into consideration. A "hesitation mark" such as a dot in the voting position target shall not be considered a valid mark unless it is demonstrated that the voter consistently marked his or her ballot in such a manner.

E. If a contest is marked with more choices than there are offices to be filled or measures that may prevail, the vote shall not be counted for that contest, but shall be counted in all other contests in which there is no overvote and the voter's choice can be clearly determined.

F. If a contest is marked with fewer choices than there are offices to be filled or measures that may prevail, the vote choice(s) for all otherwise properly marked candidates or measures shall be counted.

G. Write-in votes are counted pursuant to the provisions established in Elections Code §§14420 and 15342.

Standards for Optical Scan Ballot Counting:

A. Standards Indicating a Valid Vote

A voter's choice shall be considered a valid vote, if the:

1. Voter indicates vote choice by consistently filling inside the entire voting position target.
2. Voter indicates vote choice by consistently filling in less than the entire voting position target for all vote choices on the ballot and the ballot is processed in a manner consistent with the use procedures provided and approved for the voting system.
3. Voter indicates vote choice by consistently placing a distinctive mark, such as (X) or (√) or (←), inside the associated voting position target for a candidate choice or ballot measure.
4. Voter indicates vote choice by consistently placing a distinctive mark, such as (X) or (√) or (←), in the corresponding space directly above, below or beside the associated voting position target for a candidate or ballot measure.
5. Voter marks vote choices by encircling the entire voting position target for a candidate or ballot measure.
6. Voter indicates voting error correction by using correction tape, strikeover, white-out or generic written note of instruction and marks another vote choice for the same contest on the ballot.
7. Voter writes in a qualified write-in candidate's name, or a reasonable facsimile of the spelling of the name, in the designated write-in spaces directly below the list of candidates for that office and marks the associated write-in voting target position.

8. Voter writes in a listed candidate's name in the designated write-in space and marks the associated write-in voting target position. In such cases, the vote shall be counted as a single vote for the listed candidate.
9. Voter marks a voting target position for a listed candidate and also enters the listed candidate's name in the designated candidate write-in space. In such cases, the vote shall be counted as a single vote for the listed candidate.
10. Voter writes in qualified write-in candidate's name, or a reasonable facsimile of the spelling of the name, on the secrecy sleeve envelope or stub and indicates the contest for which the vote is being cast, in the case of voting systems where write-in spaces appear separately from the list of candidates for an office and do not provide voting position targets.

B. Standards Indicating an Invalid Vote

A voter's choice shall be considered an invalid vote, if the:

1. Voter uses random markings, indentations, punctures or impressions, squiggly/dimpled or crimp marks, pinholes or pinpricks on a ballot, and there is no distinctive and consistent voting pattern to clearly indicate voter choice(s).
2. Voter indicates vote choice by filling in less than the entire voting position target, and the voter has not consistently marked the entire ballot in the same manner, making voter's choice unclear.
3. Voter inconsistently places a mark above, below or beside the associated voting position target on a ballot, instead of inside the voting position target, and voter's choice cannot be clearly determined.
4. Voter writes in the name of a person who has not qualified as a write-in candidate.
5. Voter writes in a listed candidate's name in the designated write-in space and fills in the associated voting position target for a different listed candidate in the same contest.
6. Voter writes in a candidate name that is unrecognizable/undecipherable and it cannot be determined for whom the vote is intended to be cast..
7. Voter writes in a qualified write-in candidate's name in the designated write-in space and does not fill in the associated voting position target for the write-in candidate.
8. Voter uses pressure-sensitive stickers, rubber stamps, glued stamps, or any other device not provided for in the voting procedures for the voting systems approved by the Secretary of State to indicate the name of the voter's choice for a write-in candidate.

8.8 Post-election Logic and Accuracy Testing

Accuracy testing consists of those procedures necessary to ensure hardware and software to be used in the election are working properly, both as individual units and as a combined system. Instructions for performing the accuracy test are described in the Hart InterCivic *Hart Voting System Support Procedures Training Manual* 6300-006 6XA.

8.9 Final Reporting of Official Canvass

The data for final reporting of the Official Canvass is derived from Tally. Before the data for the election are considered final in Tally:

- All MBBs for the election must have been read into Tally.
- All MBB data must have been tabulated by Tally.
- All write-in votes must be assigned or rejected.
- All provisional ballots must be assigned or rejected.
- The Tally election database must be finalized to label reports as “Official.”

The Canvass Report can then be generated to serve as the Official Canvass for the election from the Canvass Report item in the Reporting tab.

- The Canvass Report can be printed.
- The Tally Custom Report Wizard can be used to generate subsets of the Canvass Report.
- The Tally Export Wizard can be used to export results to a delimited text file.

8.10 Back-up and Retention of Election Material

8.10.1 Archiving

At the close of the election, all data from the election is to be archived. Archiving of data is a simple process of copying information to a CD. The Tally application stores the complete record of the election. The BOSS database is used to initiate Tally, and when the MBBs are read into Tally, all CVRs and PVS audit data are stored by Tally. By copying the Tally database to CD you have archived the entire election. It is recommended to archive the BOSS database separately, as well, so that both ends of the election cycle are distinct datasets. This will aid any subsequent review process that may be required. The data are copied to a CD-R disc (a read-only CD) with standard CD-writing software. Once the write process closes the CD-R disc, no additional information can be written to the disc, and the disc will function as a read-only disc.

8.10.2 Retention

Backups made on CDs (read-only compact discs) of the election’s databases from the BOSS, Ballot Now, and Tally applications shall be retained in a secure location. The procedures for backing up databases to CD are described in the Hart InterCivic *Hart Voting System Support Procedures Training Manual* #6300-006 6XA and in the Operations Manual for each software application.

All record logs from pre-election equipment preparation and from polling places shall be retained in a secure location. Master copies of the Cast Vote Records (the MBBs and paper ballots) and the accumulated results from Tally shall be retained in secure locations designated by the local election official and separate from the location of working copies from the time of completion of pre-election Ballot Inspection and Verification:

- For as long after the election as required by law; or
- By order of a court or directive of the Secretary of State.

After certification of the election results, any changes to the central tabulating software or the ballot results sets shall be completely documented in the central system internal audit

log. Ballot control logic source code shall be placed in escrow pursuant to state law. Upon certification of the election results, Elections Code section 17300 through 17306 and 15307 apply to the handling security and disposition of unused materials. The retention of electronic ballots and related election materials is six months for all elections if no federal elections are involved. The retention period for federal elections is twenty-two months. Retention periods may be extended in the event of a court challenge.

9 Manual Recount procedures

9.1 Request for Recount

A request for a recount and the conduct of the recount shall be made in accordance with Elections Code section 15600 and following.

9.2 Observers

Each candidate, and each side in the case of a ballot measure, shall be allowed not more than two observers for each recount board and may not touch or handle the transport media. All questions must be directed to the elections official in charge of the recount.

9.3 Hours of Operation

Prior to the beginning of the recount, all parties will be notified of the hours of operation.

9.4 Ballot Supervision/Breaks

At least two people will attend ballots at all times during the recount, including breaks and lunch periods. Recount boards will be permitted break periods in the morning and afternoon, in addition to a lunch break. They will not stop for a break or for lunch while recounting a precinct.

9.5 Recount from Ballots Scanned by Ballot Now

A precinct-by-precinct recount can be performed on paper ballots scanned by Ballot Now. The votes on the paper ballots can be recorded manually and then compared with election results from Tally.

10 Security

10.1 Physical Security of System and Components

The prepared Vote-PAD booklets shall be sealed using a numbered seal and the numbers entered into a permanent log, by ballot type. The booklets, audiotapes, and other material shall be kept in a secure area during testing and storage, with access limited to election office personnel. The booklets, tapes, and other material will be treated with the same security procedures required for ballots during the election process.

The Election Management computers and servers should be operated in a room that is limited to authorized personnel. The room should be locked except during working hours. Access to the computers should be logged and monitored. Computers should be locked to a desk, table, or stanchion. The housing of a computer should be locked to prevent access to the inside of the computer. eCMs written for the election should be kept in a secure location. Use of the eCMs should be logged and monitored.

10.2 Logical Security of System and Components

10.2.1 Essential and Non-essential Services and Ports

Hart Voting System applications are installed by Hart InterCivic personnel. The Election Management computer network is isolated from any other network. During installation, the following services are disabled on the jurisdiction's Election Management System PCs:

- Internet Connection Sharing
- Automatic Updates
- Fax Service
- Messenger
- Outlook
- NetMeeting Remote Desktop Sharing
- Telnet
- Wireless Configuration
- Autorun

The Election Management computer will allow access to:

- CD-writing software
- Text editor software
- System printer

10.2.2 User-level Security

An eCM is required for access to secure functions in the BOSS, Tally, and Ballot Now applications on the jurisdiction's Election Management System PCs. Components for communication with the eCM are installed on the jurisdiction's Election Management System PCs when an Election Management System's application is installed.

The eCMs should be closely managed. The number of eCMs used for an election and their PIN(s) should be logged in a secure location. eCMs should be labeled with the election name or similar information, but not with the eCM Key ID or PIN. eCMs should be stored in a secure location, separate from election MBBs.

In a given election, the signing key on the eCM is used by the BOSS application to accept the ballot formats for the election. BOSS writes the Election's signing key to every MBB, along with the Election's ID. A matching signing key must be present in the eCM(s) used in the Ballot Now and Tally applications.

When the eCM is accessed by the BOSS, Tally, or Ballot Now applications, the operator is required to enter the eCM PIN (a password selected by a jurisdiction administrator before the signing key is generated for an election). The signing key for the election and eCM PIN are written to an eCM using the Hart InterCivic eCM Manager application.

BOSS, Tally, and Ballot Now require login and password to start the application. The permission levels for users are defined by the jurisdiction when users are added to each software application. The jurisdiction should delete the administrator logins and passwords used by Hart InterCivic personnel during installation of the applications.

Composition of User IDs and passwords are described in the Operations Manual for each Hart VS application:

- Hart InterCivic *Ballot Origination Software System Operations Manual* 6100-019 Rev. 42-60B.
- Hart InterCivic *Ballot Now Operations Manual* 6100-067 Rev. 32-60B.
- Hart InterCivic *Tally Operations Manual* 6100-049 Rev. 42-60B.

10.2.3 Anti-virus Protection

Anti-virus software is installed only by Hart InterCivic personnel, but updates to definitions may be performed by the jurisdiction personnel from removable media, such as a CD, but not from an internet download.

10.2.4 Procedures for Verifying, Checking, and Installing Essential Updates and Changes

Installation of software and firmware upgrades is performed only by Hart InterCivic personnel if or when necessary. No software or firmware upgrades may be performed unless the upgrade has been certified by the Secretary of State.

10.2.4.1 Audit Records for the Changes Showing What, When, Who, and Why
Hart InterCivic supplies a log to the jurisdiction and keeps its own record of what software or firmware has been upgraded, when it was upgraded, who performed the upgrade, and why the upgrade was performed. These logs should be retained for the life of the use of the Hart Voting System.

10.2.4.2 Installation Procedures for those Updates that would normally be Installed using an Internet Connection

Hart InterCivic personnel use standardized procedures for installing updates to Election Management System PCs.

10.2.4.3 Acceptance Testing after the Installation

Hart InterCivic requires the jurisdiction to formally accept upgrades made to their Election Management System PCs. For upgrades to Election Management System PCs and/or Hart VS software, Hart InterCivic personnel will provide a log of software to be upgraded along with a description of changes in the upgraded software and install the upgrades certified by the Secretary of State. The versions of upgrade software will be verified by viewing the application version number in the application's About window, accessed from the Help menu, and formal acceptance of the application software upgrades will consist of dated signatures on the upgrade document by the representative of the jurisdiction and the representative from Hart InterCivic.

10.3 Security Procedures for Central Processing

MBB processing and Election Night procedures for Central Processing are described in detail in the *Hart Voting System Support Procedures Training Manual* 6300-006 6XA. MBBs, paper ballots, and their associated logs from the polling places are delivered to Central Processing as described in Section 5.11 Securing Audit Logs and Backup

Records. Only jurisdiction personnel may have custody of any devices, paper ballots, and documentation from the polling places.

The MBBs are delivered to Central Tabulation and are read again into the Tally System. The unique serial number in the MBBs is used to prevent duplicate storage of the information in the MBB.

Public access to Central Processing procedures shall be limited to viewing only.

10.4 Security Procedures for Polling Places

Ballot box is attended at all times by a poll worker. Vote-PADs are delivered with affixed tamper-evident security seals. Ballots are delivered with a ballot receipt that accounts for all ballots. At least three poll workers maintain custody of ballots, Vote-PAD equipment, and ballot box at all times.

10.5 Audit Trails

All components of the Hart Voting System create an audit record anytime they are accessed or information is changed. All audit records can be extracted and printed in hard copy. All audit reports, trail documents, databases, and final reports may be archived in hard copy and/or saved electronically to CD-ROM, as needed.

The BOSS, Tally, and Ballot Now applications create audit logs of actions performed. Tally audit logs also are printed in real-time to a line printer or to a file. The audit log reports for the software applications are described in their respective Operations Manuals:

- Hart InterCivic *Ballot Origination Software System Operations Manual* 6100-019 Rev. 42-60B
- Hart InterCivic *Ballot Now Operations Manual* 6100-067 Rev. 32-60B
- Hart InterCivic *Tally Operations Manual* 6100-049 Rev. 42-60B

10.5.1 Checklist of Audit Trail Reports

- BOSS Audit Trail Report – Generated from the Audit Trail command in the Reports menu
- Ballot Now Election Database Audit Log – Generated from the Audit Log – Election command in the Reports menu
- Ballot Now Security Database Audit Log – Generated from the Audit Log – Security command in the Reports menu
- Tally Audit Log – Generated from the Audit Log item in the Reporting tab

11 Biennial Hardware Certification and Notification

In brief, the steps for examination of the logic and accuracy of the Hart/Vote-PAD blended system are as follows:

- Print a test deck of ballots from Ballot Now
- Vote test deck paper ballots, using Vote-PAD booklets to mark some of the ballots for the test deck
- Log the success/failure of each of the following conditions:

- Verify that a blank ballot from the election scans
- Verify that a marked ballot from the election scans
- Verify that an undervoted ballot from the election scans
- Verify that an overvoted ballot from the election scans
- Tabulate MBBs in Tally
- Document the logic and accuracy tests